

Applicants: Lary R. Larson  
Serial No. 09/735,826  
Page 2

**In the claims:**

1-25 (Cancelled)

26. (Currently Amended) A method for forming a stackable wafer in an implantable device, comprising:
- forming an opening extending substantially through the wafer;
  - depositing conductive material within the opening to substantially fill the opening;
  - forming a bump on and extending outward from an upper surface of the wafer adjacent the conductive material; and
  - forming a contact pad on and extending outward from a lower surface of the wafer adjacent the conductive material.
27. (Previously Presented) The method set forth in claim 26, wherein forming an opening further comprises exposing a selected portion of the upper surface of the wafer to a reactive ion etching process for a preselected duration of time.
28. (Previously Presented) The method set forth in claim 26, wherein depositing conductive material within the opening further comprises depositing at least one of copper, tungsten, nickel, and aluminum within the opening.
29. (Previously Presented) The method set forth in claim 26, wherein depositing conductive material within the opening further comprises depositing a layer of conductive material over the upper surface of the wafer and within the opening, and removing a portion of the layer of conductive material overlying the upper surface of the wafer.

Applicants: Lary R. Larson  
Serial No. 09/735,826  
Page 3

30. (Previously Presented) The method set forth in claim 29 wherein removing a portion of the layer of conductive material further comprises performing a chemical mechanical polishing of the layer of conductive material to remove a portion of the layer of conductive material overlying the upper surface of the wafer.

31. (Previously Presented) The method of claim 26, wherein forming a bump on an upper surface of the wafer further comprises forming a bump wherein at least a portion of a surface of the bump is wettable.

32. (Previously Presented) The method of claim 26, wherein forming a contact pad on a lower surface of the wafer further comprises forming a contact pad wherein at least a portion of a surface of the contact pad is wettable.

33. (Previously Presented) The method of claim 26, wherein forming an opening extending substantially through the wafer further comprises forming the opening extending substantially through a substrate of the wafer.

34. (Previously Presented) The method of claim 33, wherein forming an opening extending substantially through the wafer further comprises forming the opening extending substantially through a substrate of the wafer and any additional process layers formed on the substrate.

35. (Previously Presented) The method set forth in claim 26, wherein depositing conductive material within the opening further comprises depositing conductive material in contact with at least one conductive layer disposed within the wafer.

36. (Previously Presented) A method for forming a stacked arrangement of a first and second wafer in an implantable device, comprising:

Applicants: Lary R. Larson  
Serial No. 09/735,826  
Page 4

forming an opening extending substantially through the first wafer;  
depositing conductive material within the opening to substantially fill the opening in the first wafer;

forming a bump on an upper surface of the first wafer adjacent the conductive material;

forming a contact pad on a lower surface of the first wafer adjacent the conductive material;

forming an opening extending substantially through the second wafer;  
depositing conductive material within the opening to substantially fill the opening in the second wafer;

forming a bump on an upper surface of the second wafer adjacent the conductive material;

forming a contact pad on a lower surface of the second wafer adjacent the conductive material;

positioning the first wafer adjacent the second wafer with the bump of the first wafer being adjacent the contact pad of the second wafer; and

coupling the bump of the first wafer with the contact pad of the second wafer.

37. (Previously Presented) The method set forth in claim 36, wherein coupling the bump of the first wafer with the contact pad of the second wafer further comprises soldering the bump of the first wafer with the contact pad of the second wafer.

38. (Previously Presented) The method set forth in claim 36, wherein forming an opening in the first wafer further comprises exposing a selected portion of the upper surface of the first wafer to a reactive ion etching process for a preselected duration of time.

Applicants: Lary R. Larson  
Serial No. 09/735,826  
Page 5

39. (Previously Presented) The method set forth in claim 36, wherein depositing conductive material within the opening of the first wafer further comprises depositing at least one of copper, tungsten, nickel, and aluminum within the opening of the first wafer.

40. (Previously Presented) The method set forth in claim 36, wherein depositing conductive material within the opening of the first wafer further comprises depositing a layer of conductive material over the upper surface of the first wafer and within the opening, and removing a portion of the layer of conductive material overlying the upper surface of the first wafer.

41. (Previously Presented) The method set forth in claim 40, wherein removing a portion of the layer of conductive material further comprises performing a chemical mechanical polishing of the layer of conductive material to remove a portion of the layer of conductive material overlying the upper surface of the first wafer.

42. (Previously Presented) The method of claim 36, wherein forming a bump on an upper surface of the first wafer further comprises forming a bump wherein at least a portion of a surface of the bump is wettable.

43. (Previously Presented) The method of claim 36, wherein forming a contact pad on a lower surface of the second wafer further comprises forming a contact pad wherein at least a portion of a surface of the contact pad is wettable.

44. (Previously Presented) The method of claim 36, wherein forming an opening extending substantially through the first wafer further comprises forming the opening extending substantially through a substrate of the first wafer.

Applicants: Lary R. Larson  
Serial No. 09/735,826  
Page 6

45. (Previously Presented) The method of claim 44, wherein forming an opening extending substantially through the first wafer further comprises forming the opening extending substantially through the substrate of the first wafer and any additional process layers formed on the substrate.

46. (Previously Presented) The method set forth in claim 36, wherein depositing conductive material within the opening of the first wafer further comprises depositing conductive material in contact with at least one conductive layer disposed within the first wafer.

47. (Currently Amended) A method for forming a stackable wafer for use in an implantable medical device, comprising:

providing a housing;

mounting a semiconductor module inside the housing, wherein said semiconductor module includes first and second semiconductor die in a stacked arrangement, the stacked semiconductor die having circuitry implementing an operational implantable medical device function; and

providing a plurality of electrical connections extending between the die, each electrical connection comprising an interconnection between a bump on an upper surface that extends outward from the upper surface of the first die and a contact pad on a lower surface that extends outward from the lower surface of the second die.

48. (Previously Presented) The method of claim 47 wherein a solder connection is provided for the interconnection between a bump on an upper surface of the first die and a contact pad on a lower surface of the second die.

49. (Previously Presented) The method of claim 47 wherein delivery of electrical stimulation therapy is performed via said circuitry.

Applicants: Lary R. Larson  
Serial No. 09/735,826  
Page 7

50. (Previously Presented) The method of claim 47 wherein pacing and sensing function are implemented by the circuitry.